5   **CLAIMS**

1.   A method, comprising:

providing a block of IWT (integer wavelet transform) coefficients for at least one frequency sub-band of an image;

determining a mean value of said coefficients within said block; and

10   establishing an encoded mean value to embed one of a logical-0 bit value and a logical-1 bit into said first block.

2.   The method of claim 1 wherein said establishing comprises:

maintaining said mean value unchanged to embed a logical-0 value into said block.

3.   The method of claim 1 wherein said establishing comprises:

15   changing said mean value to embed a logical-1 bit value into said block.

4.   The method of claim 1 further comprising:

not using modulo-256 addition for grayscale values of pixels in a spatial-domain block affected by changes in said block of IWT coefficients.

5.   The method of claim 1 further comprising:

20   avoiding truncation of grayscale values of pixels in a spatial-domain block corresponding to said block of IWT coefficients without using modulo-256 addition on said grayscale values.

6.   The method of claim 1 further comprising:

correcting any erroneous bit arising from said establishing using error code correction

7.   The method of claim 1 further comprising:

25   identifying a distribution of grayscale values of pixels in a spatial-domain block affected by said IWT coefficients; and

customizing said establishing according to said grayscale-value distribution.

8.   The method of claim 1 wherein said IWT coefficients comprise:

LL_1 coefficients.

30   9.   The method of claim 3 wherein said changing comprises:

shifting at least one coefficient of a block in an HL_1 sub-band by a shift quantity.

10.   The method of claim 9 wherein said changing further comprises:

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5   shifting at least one coefficient of an associated block in an LL_1 sub-band by about one quarter of said shift quantity.

11.   A method, comprising:

dividing IWT (integer wavelet transform) coefficients for at least one frequency band of an image into a plurality of non-overlapping blocks;

10   determining a mean value of coefficients within a first block of said blocks; and

modifying said mean value of said coefficients to embed one or more bits of data.

12.   The method of claim 11 further comprising:

identifying at least one coefficient eligible for modification by said modifying and at least one coefficient to remain unchanged during said modifying.

15   13.   The method of claim 11 wherein said modifying said mean value comprises:

adding a shift quantity to said mean value.

14.   The method of claim 11 wherein said modifying said mean value comprises:

subtracting a shift quantity from said mean value.

15.   A method, comprising:

20   dividing IWT (integer wavelet transform) coefficients for at least one frequency band of an image into a plurality of non-overlapping blocks;

determining a mean value of coefficients within a first block of said blocks;

comparing said mean value to a threshold; and

extracting a bit value from said block based on said comparing.

25   16.   The method of claim 15 wherein said extracting comprises:

extracting a logical-1 bit value from said block if an absolute value of said mean value exceeds an absolute value of said threshold.

17.   The method of claim 15 wherein said extracting comprises:

extracting a logical-0 bit value from said block if an absolute value of said mean value is less

30   than an absolute value of said threshold.

18.   The method of claim 15 further comprising:

correcting any bit error arising from said extracting employing error correction code decoding.

19.   The method of claim 16 further comprising:

5   reducing the absolute value of said mean value by a shift quantity used during a preceding data

embedding step only if said reducing does not cause an overflow or underflow condition for

grayscale values of pixels in a spatial-domain block affected by said first block.